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PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q61721

Tsuyoshi KITAHARA

Appln. No.: 09/708,514

Group Art Unit: 2853

Confirmation No.: 1708

Examiner: Brooke, Michael S.

Filed: November 09, 2000

For: INK-JET RECORDING HEAD AND METHOD OF MANUFACTURING THE SAME

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. Since the enclosed Appeal Brief is a request for *reinstatement* of the April 21, 2004 Appeal Brief, and is also similar in all respects to the April 21, 2004 Appeal Brief, Applicant submits that no statutory fee is due (see 37 C.F.R. § 1.193(b)).

However, in the event that any fees are due, the USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: January 13, 2005



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**REQUEST FOR REINSTATEMENT OF APPEAL AND
APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of Appellant's Brief on Appeal under 37 C.F.R. § 1.192, which was filed on April 21, 2004, the Examiner issued a Restriction Requirement dated June 10, 2004.

Applicant responded to the Restriction Requirement *with traverse* on July 12, 2004. In particular, the election was made with traverse since the Examiner had already performed searches for all of the Species, as evidenced by an earlier restriction requirement, two Office Actions, an Advisory Action, and an Interview Summary on the merits (see papers dated September 17, 2002, October 24, 2002, May 21, 2003, October 24, 2003 and January 30, 2004).

In fact, the claims at issue had already been addressed in the two Office Actions. Furthermore,

the feature that the Examiner has relied on to issue the June 10, 2004 Restriction Requirement has all along been included in the relevant claims in their original form.

Subsequent to the July 12, 2004 Response to Restriction Requirement, the new Examiner in charge of the Application issued a *Final* Office Action dated September 13, 2004. The September 13, 2004 Final Office Action does not acknowledge the *Appeal Brief* filed on April 21, 2004, or acknowledge that prosecution has been reopened. In fact, the September 13, 2004 Final Office Action is identical in *all* respects to the May 21, 2003 Final Office Action, except that the rejection to newly non-elected claim 7 is removed. There are no new references or new grounds of rejection included in the September 13, 2004 Final Office Action.

In view of the above events, which have occurred since filing of the April 21, 2004 Appellant's Brief on Appeal, Applicant respectfully requests reinstatement of the Appeal.

In view of the current rule changes regarding the filing of Appeal Briefs, Applicant is submitting herewith an Appeal Brief in accordance with the provisions of 37 C.F.R. § 41.37, as follows:

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I. REAL PARTY IN INTEREST

The real party in interest is SEIKO EPSON CORPORATION, by virtue of an assignment executed by Tsuyoshi Kitahara (hereinafter “Appellant”) on January 17, 2001 and recorded in the U.S. Patent and Trademark Office on February 16, 2001 at Reel 011526 and Frame 0478.

II. RELATED APPEALS AND INTERFERENCES

Upon information and belief, there are no other prior or pending appeals, interferences, or judicial proceedings known to Appellant's Representative or the Assignee that may be related to, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1, 3, 4, 7 and 54 are pending in the Application, of which claim 7 was withdrawn as being directed to a non-elected invention in the July 12, 2004 Response to the June 10, 2004 Restriction Requirement. Since the June 10, 2004 Restriction Requirement indicates that claim 1 is generic, and claim 7 depends from claim 1, Applicant has not canceled claim 7.

Accordingly, claims 1, 3, 4 and 54 currently stand rejected and are the basis of this appeal.

IV. STATUS OF AMENDMENTS

No amendments have been submitted after the final rejection of the claims in the
September 13, 2004 Office Action.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is an ink-jet recording head. The features of independent claims 1 and 3 are described herein.

Claim 1- Claim 1 recites an ink-jet recording head. The ink-jet recording head 1 comprises a pressure producing device 12 for changing a pressure in a pressure chamber 8 containing an ink, and a plate-shaped member 2 having a front surface 2a and a back surface 2b (Figs. 1 and 4; pg. 23, lines 22-32 and pg. 24, lines 10-14 of Appellant's specification). The plate-shaped member 2 has an etched partition wall 7 formed on the front surface 2a. The partition wall defines the pressure chamber 8, an ink inlet passage 9 and a common ink storage chamber 10 (Figs. 1 and 2; pg. 23, lines 33-37 of Appellant's specification). The plate-shaped member 2 also has an etched land 11 formed on the back surface 2b, so as to correspond to the pressure chamber 8 and be in contact with an extremity of the pressure producing device 12 (pg. 24, lines 10-14 of Appellant's specification). Further, the plate-shaped member 2 has an etched elastic and deformable portion 15 so as to surround the land 11. The elastic and deformable portion 15 is capable of being elastically deformed by a deformation of the pressure producing device 12 (pg. 24, lines 18-21 of Appellant's specification).

Claim 1 further recites a nozzle plate 18 provided with a nozzle hole 19 through which an ink particle is jetted when the pressure in the pressure chamber 8 is changed by the deformation of the pressure producing device 12. The nozzle plate 18 is disposed on a side of the front surface 2a of the plate-shaped member 2 (Fig. 1; pg. 24, lines 22-31 of Appellant's

specification).

The plate-shaped member 2 includes a first layer 4 having the front surface 2a, a second layer 5 having the back surface 2b, and an intermediate layer 6 sandwiched between the first layer 4 and the second layer 5 (Fig. 1; pg. 23, lines 22-30 of Appellant's specification). Finally, the partition wall 7 is formed such that a desired portion of the first layer 4 selectively is etched over the intermediate layer 6 so that the first layer 4 is penetrated, and the land 11 is formed such that a desired portion of the second layer 5 is etched selectively over the intermediate layer 6 so that the second layer 5 is penetrated (pg. 26, lines 4-15 of Appellant's specification).

Claim 3- Claim 3 recites an ink-jet recording head. The in-jet recording head comprises a pressure producing device 12 for changing a pressure in a pressure chamber 8 containing an ink, and a plate-shaped member 2 having a front surface 2a and a back surface 2b (Figs. 1 and 4; pg. 23, lines 22-32 and pg. 24, lines 10-14 of Appellant's specification). The plate-shaped member 2 has an etched partition wall 7 formed on the front surface 2a by a first etching process (pg. 23, lines 33-35). The partition wall 7 defines the pressure chamber 8, an ink inlet passage 9 and a common ink storage chamber 10 (Figs. 1 and 2; pg. 23, lines 33-37 of Appellant's specification). The plate-shaped member 2 has an etched land 11 formed on the back surface 2b that corresponds to the pressure chamber 8 and is in contact with an extremity of the pressure producing device 12 (pg. 24, lines 10-14 of Appellant's specification). The plate-shaped member 2 also has an etched elastic and deformable portion 15 that surrounds the land 11. The elastic and deformable portion 15 is capable of being elastically deformed by a deformation of

the pressure producing device 12 (pg. 24, lines 18-21 of Appellant's specification).

Further, a nozzle plate 28 is provided with a nozzle hole 19 through which an ink particle is jetted when the pressure in the pressure chamber 8 is changed by the deformation of the pressure producing device 12. The nozzle plate 18 is disposed on a side of the front surface 2a of the plate-shaped member 2 (Fig. 1; pg. 24, lines 22-31 of Appellant's specification).

Also, the plate-shaped member 2 includes a first layer 4 having the front surface 2a, a second layer 5 having the back surface 2b, and an intermediate layer 6 sandwiched between the first layer 4 and the second layer 5 (Fig. 1; pg. 23, lines 22-30 of Appellant's specification). A first adhesive layer 21 bonds the first layer 4 and the intermediate layer 6 together and a second adhesive layer 22 bonds the second layer 5 and the intermediate layer together 6 (pg. 25, line 35 to pg. 26, line 3 of Appellant's specification).

Finally, the partition wall 7 is formed such that a desired portion of the first layer 4 is etched selectively over the first adhesive layer 21 so that the first layer 4 is penetrated, and the land 11 is formed such that a desired portion of the second layer 5 is etched selectively over the second adhesive layer 22 so that the second layer 5 is penetrated (pg. 26, lines 4-15 of Appellant's specification).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Claim 1 stands rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by JP 08-187868 to Nakamura et al. (“Nakamura”).
- B. Claims 3, 4 and 54 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nakamura in view of U.S. Patent No. 6,158,847 to Usui et al. (“Usui”).
- C. Claim 7 as previously rejected under 35 U.S.C. § 103(a) over Nakamura in view of JP 06-023982 to Okazawa et al. (“Okazawa”). (Appellant understands that claim 7 has been withdrawn subsequent to the April 21, 2004 Appeal Brief. However, since claim 1 is considered to be generic, Appellant incorporates the previous arguments provided for claim 7, as set forth below.)

VII. ARGUMENT

A. Rejection of claim 1 under 35 U.S.C. § 102(b) in view of Nakamura.

Since the September 13, 2004 Final Office Action does not set forth any new grounds of rejection or new comments regarding Nakamura, Appellant submits that the following arguments are similar in all respects to the arguments presented in the April 21, 2004 Appeal Brief.

In particular, Appellant submits that Nakamura does not disclose or suggest a plate shaped member, as recited in claim 1. For example, claim 1 recites a plate shaped member having an etched partition wall formed on a front surface and an etched land formed on a back surface.

In the May 21, 2003 Final Office Action, the Examiner maintains that Nakamura discloses the above features, but does not indicate that the features of Nakamura are “etched” (pg. 3 of Final Office Action). Rather, the Examiner maintains that the claimed “etching” does not further limit the apparatus because it does not further define any structure (pg. 4 of the Final Office Action). In response, Appellant amended the claims to more clearly define the structure, i.e. “etched” partition wall, “etched” land, etc. (October 14, 2003 Amendment). Although the October 24, 2003 Advisory Action indicates that the claim amendments were entered, the Examiner did not provide any further comments. Nevertheless, during the Examiner Interview of January 27, 2004, the Examiner continued to maintain that an etched surface is not structurally different from the surface disclosed by the prior art of record.

In the Office action of May 21, 2003, the Examiner states:

[P]roduct-by-process claims are not limited to the manipulations of the recited steps/processes, only the structure implied by the processes (MPEP 2113). Applicant further appears to suggest that there are certain advantages that can be obtained by the present invention made by such processes that cannot be obtained by the disclosure of Nakamura et al. However, only the claimed product is limited, not the advantages obtained from the implied processes.

Paper No. 15, page 6.

Appellant respectfully submits that the Examiner has misapplied MPEP 2113 to the current application.

MPEP section 2113 provides in part:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)

(Emphasis added.)

In claim 1, the fact that certain elements are etched imparts distinctive structural characteristics to the final product. In the Amendment filed March 4, 2003, Appellant argued that the etching process provides certain advantages to the final product. These advantages naturally flow from the distinctive structural characteristics resulting from the etching process. These distinctive structural characteristics are defined in the claim, by use of the term "etched".

As an example, Appellant notes that etched glass is obviously structurally different from non-etched glass. The structural characteristics of etched glass imparts a different appearance, use, etc.

In view of the above, Appellant submits that the Examiner has improperly failed to consider the structural limitation “etched”.

In addition, Appellant respectfully submits that Nakamura does not disclose, or remotely suggest, an etched partition wall. For example, in the ink jet recording head disclosed by Nakamura, only the island part 9, that is disposed on one side of the polymer film 8, is an etched structure (para. [0019] of computer translated version of Nakamura). On the other hand, Nakamura fails to disclose that the spacer 3 (i.e. alleged partition wall), which is disposed on the other side of the polymer film 8, as well as the ink inlet ports 5, and the reservoirs 6, are etched structures. Likewise, Appellant submits that the spacer 3 is not an etched structure because the pressure chamber 4 is tapered, while the vertical line of the section of the reservoir 6 is not tapered, as shown in Fig. 2 of Nakamura. Appellant submits that it would be technically impossible to form both a tapered vertical line and a non-tapered vertical line using the same etching process.

Further, Appellant submits that a high level of structural accuracy and positioning can be achieved if the claimed structures are formed by etching. For example, the features recited in claim 1 are instrumental in realizing the following advantages described in the present Application.

- i) The adhesive does not protrude into the pressure chamber and the ink inlet

passage. Further, the accuracy of the positional relation between the pressure chamber and the land is improved. Therefore, the difference in ink jetting characteristics between the nozzle holes can be reduced (i.e. non-limiting embodiment described from line 37 of page 17 to line 7 of page 18).

ii) Depths of the pressure chamber and the ink inlet passage, which affect ink jetting characteristics, are defined by the thickness of the first layer. Therefore, the differences in depth (sectional area) between the pressure chambers, and the ink inlet passages can be reduced. This further reduces the difference in ink jetting characteristics between the nozzle holes (i.e. non-limiting embodiment described in lines 8 to 16 of page 18).

Appellant submits that the above-mentioned advantages cannot be obtained by the ink jet recording head disclosed in Nakamura. Rather, the above-mentioned advantages of the present invention are realized due to the “etched” structures of the claimed invention. Therefore, Appellant submits that the present invention is structurally distinct from the ink jet recording head disclosed in Nakamura, and thus, patentable over the cited reference.

B. Rejection of claims 3, 4 and 54 under 35 U.S.C. § 103(a) in view of Nakamura and Usui

Since the September 13, 2004 Final Office Action does not set forth any new grounds of rejection or new comments regarding Nakamura and Usui, Appellant submits that the following arguments are similar to the arguments presented in the April 21, 2004 Appeal Brief:

1. Claim 3

Since claim 3 contains features which are analogous to the features recited in claim 1, and Usui fails to cure the deficient teachings of Nakamura, Appellant submits that claim 3 is patentable over the cited references for at least analogous reasons as presented above.

2. Claims 4 and 54

Since claims 4 and 54 are dependent upon claims 1 and 3, respectively, Appellant submits that claims 4 and 54 are patentable at least by virtue of their dependency.

C. Previous rejection of claim 7 under 35 U.S.C. § 103(a) in view of Nakamura and Okazawa (as set forth in May 21, 2003 Final Office Action)

Although claim 7 has been withdrawn as directed to a non-elected invention, in view of the June 10, 2004 Restriction Requirement, Appellant incorporates herein all arguments regarding claim 7 that were previously submitted in the April 21, 2004 Appeal Brief. Appellant refers to the June 10, 2004 Restriction Requirement, which indicates that claim 1 is considered *generic*. Since claim 7 is dependent upon claim 1, Appellant respectfully requests that such claim be rejoined in the Application upon allowance of claim 1.

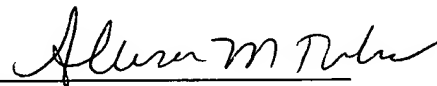
Appeal Brief under 37 C.F.R. § 41.37
U.S. Application No. 09/708,514

Attorney Docket No. Q61721

Pursuant to 37 C.F.R. § 1.193(b), Appellant submits that no fee is required (i.e., since the current Appeal Brief is a *reinstatement* of the Appeal Brief filed on April 21, 2004). However, if a fee is deemed necessary, please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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WASHINGTON OFFICE

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CUSTOMER NUMBER

Date: January 13, 2005

CLAIMS APPENDIX

CLAIMS 1, 3, 4, 7 and 54 ON APPEAL:

1. (rejected) An ink-jet recording head comprising:

a pressure producing device for changing a pressure in a pressure chamber containing an ink;

a plate-shaped member having a front surface and a back surface, the plate-shaped member having an etched partition wall formed on the front surface, the partition wall defining the pressure chamber, an ink inlet passage and a common ink storage chamber, the plate-shaped member having an etched land formed on the back surface so as to correspond to the pressure chamber and be in contact with an extremity of the pressure producing device, the plate-shaped member having an etched elastic and deformable portion so as to surround the land, the elastic and deformable portion being capable of being elastically deformed by a deformation of the pressure producing device; and

a nozzle plate provided with a nozzle hole through which an ink particle is jetted when the pressure in the pressure chamber is changed by the deformation of the pressure producing device, the nozzle plate being disposed on a side of the front surface of the plate-shaped member,

wherein the plate-shaped member includes a first layer having the front surface, a second layer having the back surface and an intermediate layer sandwiched between the first layer and the second layer, and

wherein the partition wall is formed such that a desired portion of the first layer

selectively is etched over the intermediate layer so that the first layer is penetrated, and the land is formed such that a desired portion of the second layer is etched selectively over the intermediate layer so that the second layer is penetrated.

3. (rejected) An ink-jet recording head comprising:

a pressure producing device for changing a pressure in a pressure chamber containing an ink;

a plate-shaped member having a front surface and a back surface, the plate-shaped member having an etched partition wall formed on the front surface by a first etching process, the partition wall defining the pressure chamber, an ink inlet passage and a common ink storage chamber, the plate-shaped member having an etched land formed on the back surface that corresponds to the pressure chamber and is in contact with an extremity of the pressure producing device, the plate-shaped member having an etched elastic and deformable portion that surrounds the land, the elastic and deformable portion being capable of being elastically deformed by a deformation of the pressure producing device; and

a nozzle plate provided with a nozzle hole through which an ink particle is jetted when the pressure in the pressure chamber is changed by the deformation of the pressure producing device, the nozzle plate being disposed on a side of the front surface of the plate-shaped member,

wherein the plate-shaped member includes a first layer having the front surface, a second layer having the back surface, an intermediate layer sandwiched between the first layer and the second layer, a first adhesive layer bonding the first layer and the intermediate layer together and

a second adhesive layer bonding the second layer and the intermediate layer together,

wherein the partition wall is formed such that a desired portion of the first layer is etched selectively over the first adhesive layer so that the first layer is penetrated, and the land is formed such that a desired portion of the second layer is etched selectively over the second adhesive layer so that the second layer is penetrated.

4. (rejected) The ink-jet recording head according to claim 1, wherein the first and the second layers are formed of a stainless steel, and the intermediate layer is formed of a polymer film.

7. (withdrawn) An ink-jet recording head according to claim 1,
wherein the plate-shaped member does not have any adhesive layer between the first and the intermediate layers nor between the second and the intermediate layers.

54. (rejected) The ink-jet recording head according to claim 3 wherein the first and the second layers are formed of a stainless steel, and the intermediate layer is formed of a polymer film.

EVIDENCE APPENDIX:

NONE

Appeal Brief under 37 C.F.R. § 41.37
U.S. Application No. 09/708,514

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RELATED PROCEEDINGS APPENDIX

NONE